

JIS

JAPANESE INDUSTRIAL STANDARD

Track format for
90 mm flexible disk
cartridges—7958 ftprad

JIS X 6222—1990

Translated and Published

by

Japanese Standards Association

Printed in Japan

In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

JAPANESE INDUSTRIAL STANDARD

J I S

Track format for 90 mm flexible disk cartridges — 7958 ftprad

X 6222-1990

1. Scope

This Japanese Industrial Standard specifies track formats for recording information on the 90 mm flexible disk cartridges specified in JIS X 6221 (hereafter referred to as the "flexible disks") at 7958 flux transitions per radian (ftprad), and at a track density of 5.3 tracks per mm (tp mm).

Remarks 1. Applicable Standards are as follows:

JIS X 0001-Glossary of Terms Used in Information Processing (Fundamental Terms)

JIS X 0002-Glossary of Terms Used in Information Processing (Arithmetic and Logic Operations)

JIS X 0004-Glossary of Terms Used in Information Processing (Organization of Data)

JIS X 0008-Glossary of Terms Used in Information Processing (Control, Integrity and Security)

JIS X 0012-Glossary of Terms Used in Information Processing (Data Media, Storage and Related Equipment)

JIS X 0201-Code for Information Interchange

JIS X 0202-Information Processing—ISO 7-bit and 8-bit Coded Character Sets—Code Extension Techniques

JIS X 0208-Code of the Japanese Graphic Character Set for Information Interchange

JIS X 0605-Volume and File Structure of Flexible Disk Cartridges for Information Interchange

JIS X 6221-90 mm Flexible Disk Cartridges (7958 ftprad)

2. Corresponding International Standards are as follows:

ISO 8860-2 Information processing—Data interchange on 90 mm (3.5 in) flexible disk cartridges using modified frequency modulation recording at 7958 ftprad on 80 tracks on each side—Part 2: Track format

2. Definitions

For the main terms used in this Standard the definitions in JIS X 0001, JIS X 0002, JIS X 0004, JIS X 0008, JIS X 0012 and JIS X 6221 apply, and the rest of the terms shall be as follows:

- (1) **MFM (Modified Frequency Modulation) recording mode** A mode in which a flux transition occurs at the center of bit cell if the data contain "1" and a flux transition occurs at the boundary of bit cell containing "0" if the data contains consecutive "0"s.

3. General Requirements for Recording

3.1 **Recording Mode** The recording mode shall be MFM recording mode for all tracks.

3.2 **Tolerances on Radius of Recorded Track** Tolerances on the radius of the recorded tracks shall be within ± 0.028 mm of the nominal value of the radius in the track center line specified in 6.4 of JIS X 6221.

But this value shall be measured in accordance with the operating conditions specified in JIS X 6221.

3.3 Recording Offset Angle The offset angle in recording shall be based on the following formula.

$$\theta = \arcsin\left(\frac{d}{R_n}\right) \pm 0^\circ 18'$$

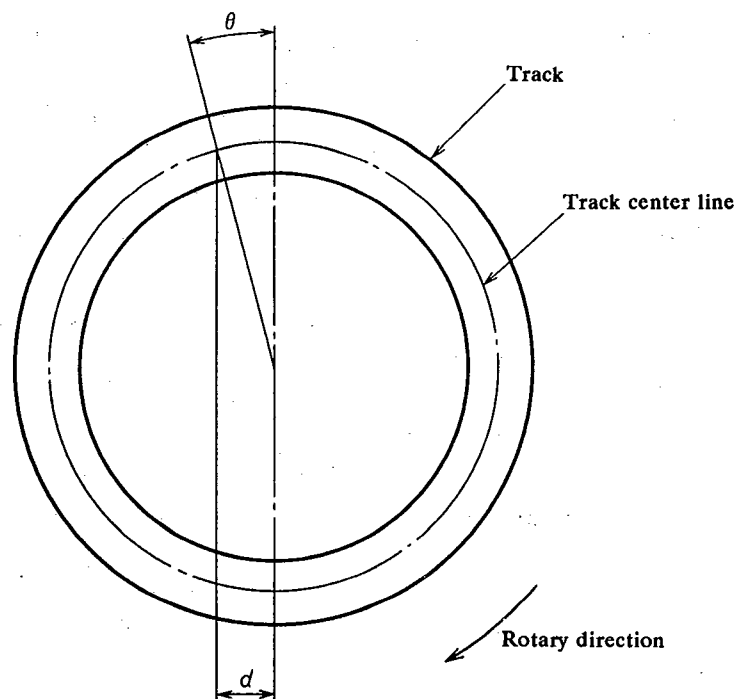
where, θ : offset angle in recording ($^\circ$)

d : 0.35 mm

R_n : nominal value (mm) of the radius of the track center line defined in JIS X 6221

The offset angle referred here means the angle of flux transition which occurs at the instant of writing or reading data, with the radius (refer to Fig. 1).

Fig. 1. Offset Angle in Recording



3.4 Density of Recording and Bit Cell Length

3.4.1 Density of Recording The nominal density of recording shall be 7958 ftrpad, and the nominal value of the bit cell length shall be 125.7 μ rad.

3.4.2 Long-term Average Bit Cell Length The long-term average bit cell length shall be the average of the values measured over a sector, and it shall not deviate by more than $\pm 2.0\%$ of the nominal bit cell length.

3.4.3 Short-term Average Bit Cell Length The short-term average bit cell length, referred to a particular bit cell, shall be the average of the lengths of the preceding eight bit cells, and it shall not deviate by more than $\pm 8\%$ of the long-term average bit cell length.

3.5 Flux Transition Spacing The instantaneous spacing between flux transitions is influenced by the reading and writing process, the bit sequence (pulse crowding effects) and other factors. The locations of the transitions are defined as the locations of the peaks in the signal when reading. The flux transition spacing shall be as follows (see Fig. 2; refer to Appendix and Informative Reference 1).